

Review of Test Concepts: Extreme Values

1.) If you have $f(x)$ and need to find the critical points, you should set _____ equal to _____

2.) To check for a max or a min @ a critical point, look to see if $f'(x)$ changes from:

_____ to _____ for a max or

_____ to _____ for a min

Concavity and Inflection Points

1.) A function is concave up when $f''(x)$ is _____ and concave down when $f''(x)$ is _____

2.) Inflection points, happen when _____ = _____ and changes _____ :

Related Rates:

Steps for solving Related Rates Problems:

1.)

2.)

3.)

4.)

5.)

6.)

Linear Approximation:

To find the linear approximation of a function $f(x)$ for a point near $x = a$:

1.) Take the derivative and plug in "a". This gives you the _____ of the tangent line.

2.) Find the y-coordinate at $x = a$ by _____

3.) Write an equation in point slope form:

The Mean Value Theorem:

Given a function $f(x)$ on a closed interval $[a, b]$, there must be an x value " c " such that instantaneous rate equals the average rate.

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

Given the function $f(x) = \sqrt{2x - 3}$ on $[2, 6]$, find " c " such that:

$$f'(c) = \frac{f(6) - f(2)}{6 - 2}$$